

**DRAFT**  
**Water and Wastewater Capacity Fee Report**

**Prepared for:**  
**Kingman, Arizona**

**August 23, 2021**



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## EXECUTIVE SUMMARY

The City of Kingman, Arizona, retained TischlerBise to calculate Water and Wastewater capacity fees. Kingman currently assesses Water connection fees and Wastewater development fees; however, Kingman plans to discontinue both fees upon adoption of the Water and Wastewater capacity fees. The suspension of Water connection fees and Wastewater development fees and the implementation of capacity fees should ensure there is neither a gap nor an overlap of the three programs. Kingman should maintain current Water connection fee and Wastewater development fee funds and follow the state requirements for accounting and reporting until those fees are fully expended and all fee payers have received their substantial benefit. Kingman should also create new, separate funds for Water and Wastewater capacity fees to deposit and account for these revenues.

Capacity fees are one-time payments used to defray the cost impacts of facilities necessary to accommodate future development. The payment amount represents future development's fair share of capital facility needs. The City of Kingman recently adopted the Water System Master Plan Update (2018) and the Wastewater Master Plan Update & Inflow/Infiltration Study (2016) that identifies growth-related capital improvements for water and wastewater service. TischlerBise used the master plans and Kingman's Capital Improvement Plan (CIP) to prepare the Water and Wastewater capacity fees.

TischlerBise evaluated possible methodologies and documented appropriate demand indicators by type of development for the capacity fees. Specific capital costs have been identified using local data and current dollars. It should be noted that although growth affects both capital and operating expenses, the capacity fee analysis addresses future development's impact on capital facilities only. It is further limited to capital improvements that provide additional capacity as opposed to maintenance or rehabilitation.

## ARIZONA CAPACITY FEE ENABLING LEGISLATION

The Enabling Legislation governs how capacity fees are calculated for municipalities in Arizona. Kingman will assess its Water and Wastewater capacity fees under the authority of ARS § 9-511.01.

- A) A municipality engaging in a domestic water or wastewater business shall not increase any water or wastewater rate or rate component, fee or service charge without complying with the following:
- 1) Prepare a written report or supply data supporting the increased rate or rate component, fee or service charge. The report or supporting data shall include cash flow projections that indicate all anticipated revenues from residential and nonresidential customers and the overall expenses for providing water or wastewater service. A copy of the report and cash flow projections shall be made available to the public by filing a copy in the office of the clerk of the municipality governing board and posting the report and cash flow projections on the municipality's website or the website of an association of cities and towns if the municipality does not have a website at least thirty days before the public hearing described in paragraph 2 of this subsection.
  - 2) Adopt a notice of intention by motion at a regular council meeting to increase water or wastewater rates or rate components, fees or service charges and set a date for a public hearing on the proposed increase that shall be held at least sixty days after adoption of the notice of intention. A copy of the notice of intention showing the date, time and place of the hearing shall be published one time in a newspaper of general circulation within the boundaries of the municipality not less than twenty days before the public hearing date.

- B) After holding the public hearing, the governing body may adopt, by ordinance or resolution, the proposed rate or rate component, fee or service charge increase or any lesser increase.
- C) Notwithstanding section 19-142, subsection B, the increased rate or rate component, fee or service charge shall become effective thirty days after adoption of the ordinance or resolution.
- D) Any proposed water or wastewater rate or rate component, fee or service charge adjustment or increase shall be just and reasonable.
- E) Rates and charges demanded or received by municipalities for water and wastewater service shall be just and reasonable. Every unjust or unreasonable rate or charge demanded or received by a municipality is prohibited and unlawful.
- F) A municipality may not assess or collect a fee on new water or wastewater service connections at the time of the establishment of service to those connections for the purpose of recovering the municipality's costs of acquiring, whether by purchase or by eminent domain, the utility plant, facilities, system or other property of a public service corporation or another municipality engaged in the business of providing water or wastewater service. This subsection does not apply to water or wastewater fees adopted before January 1, 2016, or to water or wastewater fees included in a notice of intent to adopt or increase water or wastewater rates and fees adopted before January 1, 2016.
- G) For residential property of four or fewer units, a municipality shall not require payment of unpaid water and wastewater service rates and charges by anyone other than the person who the municipality has contracted with to provide the service, who physically resides or resided at the property and who receives or received the service. A property owner, an immediate family member of the person who does not reside at the property or any other entity, at its sole discretion, may contract for water and wastewater service with a municipality and shall provide payment.
- H) For residential property of four or fewer units, a municipality shall not refuse service within the municipality's service area for the unpaid water and wastewater rates and charges to anyone other than the person who physically resided and received the service at the property. A property owner, at the owner's sole discretion, may contract for water and wastewater service with a municipality and shall provide payment for that service.

## **INTRODUCTION TO CAPACITY FEES**

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Capacity fees, which are calculated in a similar manner to development fees, are one-time payments used to fund capital improvements necessitated by future development. Because the calculation and use are similar to that of development fees, information about development fees is provided below. Development fees / capacity fees have been utilized by local governments in various forms for at least fifty years. Development fees / capacity fees do have limitations and should not be regarded as the total solution for infrastructure financing needs. Rather, they should be considered one component of a comprehensive portfolio to ensure adequate provision of public facilities with the goal of maintaining current levels of service in a community. Any community considering facility fees should note the following limitations:

- 1) Fees can only be used to finance capital infrastructure and cannot be used to finance ongoing operations and / or maintenance and rehabilitation costs;
- 2) Fees cannot be deposited in the City's General Fund. The funds must be accounted for separately in individual accounts and earmarked for the capital expenses for which they were collected; and
- 3) Fees cannot be used to correct existing infrastructure deficiencies unless there is a funding plan in place to correct the deficiency for all current residents and businesses in the community.

## **REQUIRED FINDINGS**

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There are three reasonable relationship requirements for capacity fees / development fees that are closely related to “rational nexus” or “reasonable relationship” requirements enunciated by a number of state courts. Although the term “dual rational nexus” is often used to characterize the standard by which courts evaluate the validity of capacity fees / development fees under the U. S. Constitution, we prefer a more rigorous formulation that recognizes three elements: “impact or need,” “benefit,” and “proportionality.” The dual rational nexus test explicitly addresses only the first two, although proportionality is reasonably implied, and was specifically mentioned by the U.S. Supreme Court in the *Dolan* case. The reasonable relationship language of the statute is considered less strict than the rational nexus standard used by many courts. Individual elements of the nexus standard are discussed further in the following paragraphs.

**Demonstrating an Impact.** All future development in a community creates additional demands on some, or all, public facilities provided by local government. If the supply of facilities is not increased to satisfy that additional demand, the quality or availability of public services for the entire community will deteriorate. Capacity fees / development fees may be used to recover the cost of development-related facilities, but only to the extent that the need for facilities is a consequence of development that is subject to the fees. The *Nollan* decision reinforced the principle that development exactions may be used only to mitigate conditions created by the developments upon which they are imposed. That principle clearly applies to capacity fees / development fees. In this study, the impact of development on improvement needs is analyzed in terms of quantifiable relationships between various types of development and the demand for specific facilities, based on applicable level-of-service standards.

**Demonstrating a Benefit.** A sufficient benefit relationship requires that capacity fee / development fee revenues be segregated from other funds and expended only on the facilities for which the fees were charged. Fees must be expended in a timely manner and the facilities funded by the fees must serve the development paying the fees. However, nothing in the U.S. Constitution or the State enabling Act authorizing the City’s capacity fees / development fees requires that facilities funded with fee revenues be available *exclusively* to development paying the fees. In other words, existing development may benefit from these improvements as well.

Procedures for the earmarking and expenditure of fee revenues are typically mandated by the State Enabling Legislation, as are procedures to ensure that the fees are expended expeditiously or refunded. All of these requirements are intended to ensure that developments benefit from the fees they are required to pay. Thus, an adequate showing of benefit must address procedural as well as substantive issues.

**Demonstrating Proportionality.** The requirement that exactions be proportional to the impacts of development was clearly stated by the U.S. Supreme Court in the *Dolan* case (although the relevance of that decision to capacity fees / development fees has been debated) and is logically necessary to establish a proper nexus. Proportionality is established through the procedures used to identify development-related facility costs, and in the methods used to calculate capacity fees / development fees for various types of facilities and categories of development. The demand for facilities is measured in terms of relevant and measurable attributes of development.

## CAPACITY FEES

### METHODOLOGY

There are two basic methodologies used to calculate capacity fees. The plan-based methodology is commonly used for public facilities that have adopted plans or engineering studies to guide capital improvements, such as utility systems. A second approach, known as the cost recovery methodology, is based on the rationale that future development is paying for its share of the useful life and remaining unused capacity of an existing facility or land.

A general requirement common to capacity fee calculations is the evaluation of credits. Two types of credits should be considered, future revenue credits and site-specific credits. Revenue credits may be necessary to avoid potential double payment situations arising from a one-time facility fee plus the payment of other revenues that may also fund growth-related capital improvements. Revenue credits are dependent upon the fee methodology used in the cost analysis.

To avoid this potential double payment situation, future revenue credits are appropriate to account for outstanding debt on City facilities. A credit is necessary since new residential units that will pay the fee will also contribute to future principal payments on this remaining debt through property taxes. A credit is not necessary for interest payments because interest costs are not included in the costs.

The second type of credit, a site-specific credit, is for system improvements that have been included in the fee calculations. Policies and procedures related to site-specific credits for system improvements should be addressed in the ordinance that establishes the City's capacity fees. However, the general concept is that developers may be eligible for site-specific credits or reimbursements only if they provide system improvements that have been included in the calculations. Project improvements normally required as part of the development approval process are not eligible for credits against capacity fees.

### CAPACITY FEE COMPONENTS

Shown below, Figure 1 summarizes service areas, methodologies, and infrastructure cost components for Kingman's proposed capacity fees. Appendix A includes a map of the proposed service areas.

**Figure 1: Proposed Capacity Fee Service Areas, Methodologies, and Cost Components**

Infrastructure Category	Service Area	Buy-In	Plan-Based	Cost Allocation
Water Facilities	Water	N/A	Wells, Storage / Booster Stations, Distribution / Transmission	Max Day Gallons
Wastewater Facilities	Wastewater	Treatment Facilities	Interceptor Facilities	Average Day Gallons



## PROPOSED CAPACITY FEES

Water and Wastewater capacity fees will be assessed by size and type of meter but will not vary by location within the city limits or outside the city limits. Fees shown below represent the maximum allowable fees. Kingman may adopt fees that are less than the amounts shown; however, a reduction in capacity fee revenue will necessitate an increase in other revenues, a decrease in planned capital improvements, and / or a decrease in Kingman's LOS standards. All costs in the Water and Wastewater Capacity Fee Report represent current dollars with no assumed inflation rate over time. If cost estimates change significantly over time, capacity fees should be recalibrated.

Current Water connection fees are assessed by the size and type of meter and the location inside the city limits or outside the city limits. Current Wastewater development fees are assessed per fixture for all new customers. For an average single-family unit (0.75-inch meter) located within the city limits, the current Water connection fee is \$2,500 and the current Wastewater development fee is \$1,456 (\$91 per fixture X 16 fixtures) for a current total of \$3,956 per single-family unit. The proposed Water and Wastewater capacity fees for a single-family unit (0.75-inch meter) equal \$4,107. The current Water connection fees and Wastewater development fees will be retired upon adoption of the proposed capacity fees.

**Figure 2: Proposed Capacity Fees**

Meter Size and Type		Water	Wastewater	Total
0.75	Displacement	\$874	\$3,233	\$4,107
1.00	Displacement	\$1,460	\$5,400	\$6,860
1.50	Displacement	\$2,912	\$10,767	\$13,679
2.00	Displacement	\$4,661	\$17,234	\$21,895
3.00	Singlejet	\$9,331	\$34,500	\$43,831
3.00	Compound	\$9,331	\$34,500	\$43,831
3.00	Turbine	\$10,205	\$37,734	\$47,939
4.00	Singlejet	\$14,577	\$53,901	\$68,478
4.00	Compound	\$14,577	\$53,901	\$68,478
4.00	Turbine	\$18,364	\$67,901	\$86,265
6.00	Singlejet	\$29,146	\$107,769	\$136,915
6.00	Compound	\$29,146	\$107,769	\$136,915
6.00	Turbine	\$37,891	\$140,103	\$177,994
8.00	Compound	\$46,635	\$172,437	\$219,072
8.00	Turbine	\$81,614	\$301,773	\$383,387
10.00	Turbine	\$122,426	\$452,676	\$575,102
12.00	Turbine	\$154,493	\$571,245	\$725,738

## WATER FACILITIES

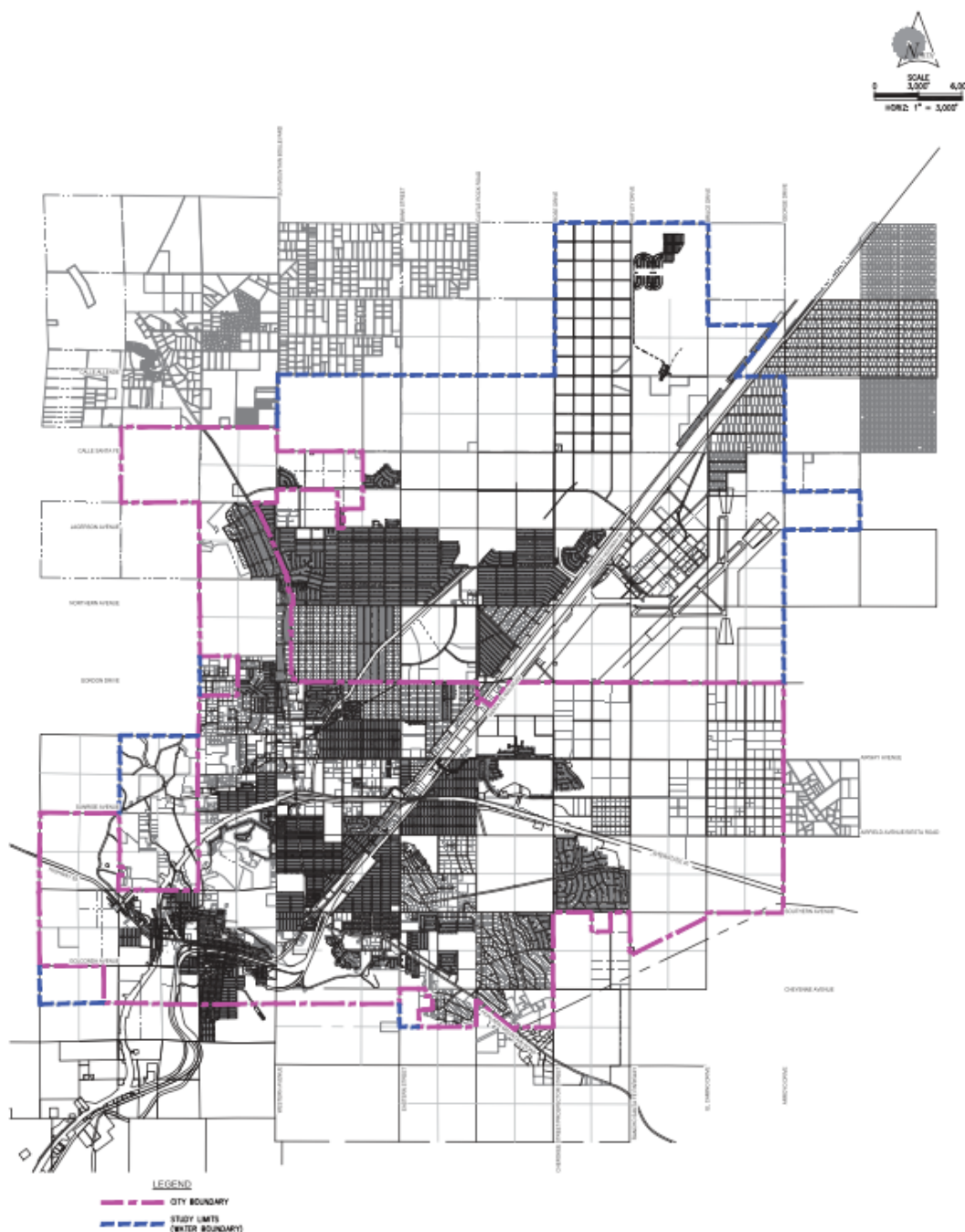
### METHODOLOGY

Water capacity fees include capital components for wells, storage / booster stations, and distribution / transmission. The plan-based methodology is used for all components.

### SERVICE AREA

The Water Service Area includes areas within the “study limits” shown in Figure W1.

**Figure W1: Water Service Area**



## WATER FACTORS

Figure W2 displays the average day gallons and max day gallons per account as identified in Kingman's Water System Master Plan Update (2018). Water capacity fees are calculated using max day gallons (average day X 1.5 demand factor) per single-family unit and the capital cost per gallon of capacity – this represents an equivalent dwelling unit (EDU). For residential development, max day gallons equal 309 gallons per EDU. Water capacity fees paid by nonresidential development are derived from capacity ratios, according to the size of the new customer's water meter, applied to the equivalent dwelling unit. Capacity ratios were obtained from the American Water Works Association (AWWA) Manual of Water Supply Practices M-1, 7th Edition.

**Figure W2: Water Factors**

Customer Class	Average Day Gallons	Max Day Gallons
Residential	206	309
Nonresidential	407	611

Source: Kingman Water System Master Plan Update, January 2018

## PROJECTED GALLONS

Shown below in Figure W3, Kingman's Water System Master Plan Update (2018) projects water demand within the Water Service Area will increase from 9,599,616 max day gallons in 2020 to 12,287,808 max day gallons in 2030. This results in a projected 10-year increase of 2,688,192 max day gallons – the amount of capacity needed to serve future development within the study period.

**Figure W3: Projected Gallons**

Year	Estimated Accounts	Average Day (MGD)	Maximum Day (x1.5) (MGD)
2020	20,512	6.40	9.60
2021	21,024	6.56	9.84
2022	21,550	6.72	10.09
2023	22,089	6.89	10.34
2024	22,641	7.06	10.60
2025	23,207	7.24	10.86
2026	23,787	7.42	11.13
2027	24,382	7.61	11.41
2028	24,991	7.80	11.70
2029	25,616	7.99	11.99
2030	26,256	8.19	12.29
10-Yr Increase	5,744	1.79	2.69

Source: Kingman Water System Master Plan Update, January 2018

## **CAPITAL FACILITIES**

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Shown below, Figure W4 includes the acquisition cost and capacity of Kingman's existing water facilities. For wells, Kingman spent \$10,010,898 for 20,880,000 gallons of capacity. For storage / booster stations, Kingman spent \$8,784,150 for 13,276,000 gallons of capacity. The acquisition costs have not been adjusted for inflation.

**Figure W4: Existing Water Facilities**

Description	Acquisition Cost	Capacity (Gallons)
Wells	\$10,010,898	20,880,000
Storage / Booster Stations	\$8,784,150	13,276,000

Source: Kingman Finance Department

### **Wells – Plan-Based**

Kingman's wells have some excess capacity to serve future development; however, Kingman also plans to construct well #10 to serve future development. To account for the lower cost per gallon of existing capacity, this analysis uses the weighted average of existing capacity and planned capacity. Shown below, Figure W5 divides the combined acquisition cost of the existing wells and the planned cost of well #10 by the total capacity of the existing and planned wells. Allocating the total cost to the total capacity results in a cost of \$0.61 per gallon (\$12,760,898 total cost / 20,880,000 gallons of capacity). Based on a projected increase of 2,688,192 gallons, the projected 10-year revenue collections equal \$1,639,797 – this is less than the total cost of \$2,750,000 for well #10. Kingman may collect Water capacity fees related to wells beyond the 10-year study timeframe to recover costs from future development beyond 10 years.

**Figure W5: Wells Cost per Gallon**

Description	Cost
Existing Wells	\$10,010,898
Planned Well #10	\$2,750,000
Total Cost	\$12,760,898
Total Capacity (Gallons)	20,880,000
Cost per Gallon	\$0.61
10-Year Increase (Gallons)	2,688,192
Projected Revenue	\$1,639,797

### Storage / Booster Stations – Plan-Based

Kingman’s storage / booster stations have some excess capacity to serve future development; however, Kingman also plans to construct the Northridge storage tank and the Rancho Santa Fe booster station to serve future development. To account for the lower cost per gallon of existing capacity, this analysis uses the weighted average of existing capacity and planned capacity. Shown below, Figure W6 divides the combined acquisition cost of the existing storage / booster stations and the planned cost of the Northridge storage tank and the Rancho Santa Fe booster station by the total capacity of the existing and planned storage / booster stations. Allocating the total cost to the total capacity results in a cost of \$0.92 per gallon (\$12,734,150 total cost / 13,776,000 gallons of capacity). Based on a projected increase of 2,688,192 gallons, the projected 10-year revenue collections equal \$2,473,137 – this is less than the total cost of \$3,950,000 for the Northridge storage tank and the Rancho Santa Fe booster station. Kingman may collect Water capacity fees related to storage / booster stations beyond the 10-year study timeframe to recover costs from future development beyond 10 years.

**Figure W6: Storage / Booster Stations Cost per Gallon**

Description	Cost
Existing Storage / Booster Stations	\$8,784,150
Planned Northridge Storage / RSF Booster Station	\$3,950,000
Total Cost	\$12,734,150
Total Capacity (Gallons)	13,776,000
<b>Cost per Gallon</b>	<b>\$0.92</b>
10-Year Increase (Gallons)	2,688,192
Projected Revenue	\$2,473,137

### Distribution / Transmission – Plan-Based

Within 10 years, Kingman plans to construct distribution / transmission lines with a total cost of \$7,750,000. Based on discussions with staff, future development’s share of the planned distribution / transmission lines is \$3,482,500. Figure W7 includes growth-related costs of \$3,482,500 to provide growth-related capacity of 2,688,192 gallons. The growth-related cost of planned distribution / transmission lines is \$1.30 per gallon.

**Figure W7: Distribution / Transmission Cost per Gallon**

Description	Total Cost	Growth Cost
Santa Rosa Transmission Line	\$3,750,000	\$1,125,000
Foothills Equalization/Distribution	\$3,000,000	\$1,500,000
Northridge Estates Distribution Improvements	\$285,000	\$142,500
Rancho Santa Fe TI Distribution Main	\$715,000	\$715,000
<b>Total</b>	<b>\$7,750,000</b>	<b>\$3,482,500</b>
10-Year Increase (Gallons)		2,688,192
<b>Cost per Gallon</b>		<b>\$1.30</b>

## PROPOSED WATER CAPACITY FEES

Standards used to derive Water capacity fees are shown in the upper section of Figure W8. The cost per service unit is \$2.83 per gallon, and Kingman will assess Water capacity fees based on meter size and type. The base / single-family meter size is 0.75 inches, and a capacity ratio is used to convert the base meter fee proportionately for larger meters. The capacity ratios are calculated based on data published in *AWWA Manual of Water Supply Practices M-1, 7<sup>th</sup> Edition*.

Water capacity fees are calculated by multiplying the cost per gallon of capacity by the max day gallons per EDU (single-family unit) and the associated capacity ratio. For example, the single-family fee (0.75-inch meter) of \$874 is calculated using a cost per service unit of \$2.83 per gallon, multiplied by 309 max day gallons, multiplied by a capacity ratio of 1.00.

For a 2.00-inch meter, the fee of \$4,661 is calculated using a cost per service unit of \$2.83 per gallon, multiplied by 309 max day gallons, multiplied by a capacity ratio of 5.33.

**Figure W8: Proposed Water Capacity Fees**

Fee Component	Cost per Gallon
Wells	\$0.61
Storage / Booster Stations	\$0.92
Distribution / Transmission	\$1.30
Total	\$2.83

Single-Family (Base Meter) Demand Factor	
Max Day Gallons	309

Meter Size and Type	Capacity Ratio <sup>1</sup>	Proposed Fees	Current Connection Fees <sup>2</sup>	Difference
0.75 Displacement	1.00	\$874	\$2,500	(\$1,626)
1.00 Displacement	1.67	\$1,460	\$9,405	(\$7,945)
1.50 Displacement	3.33	\$2,912	\$18,550	(\$15,638)
2.00 Displacement	5.33	\$4,661	\$28,340	(\$23,679)
3.00 Singlejet	10.67	\$9,331	\$56,500	(\$47,169)
3.00 Compound	10.67	\$9,331	\$56,500	(\$47,169)
3.00 Turbine	11.67	\$10,205	\$56,725	(\$46,520)
4.00 Singlejet	16.67	\$14,577	\$82,563	(\$67,986)
4.00 Compound	16.67	\$14,577	\$82,563	(\$67,986)
4.00 Turbine	21.00	\$18,364	\$86,313	(\$67,949)
6.00 Singlejet	33.33	\$29,146	\$176,180	(\$147,034)
6.00 Compound	33.33	\$29,146	\$176,180	(\$147,034)
6.00 Turbine	43.33	\$37,891	\$183,680	(\$145,789)
8.00 Compound	53.33	\$46,635	N/A	N/A
8.00 Turbine	93.33	\$81,614	N/A	N/A
10.00 Turbine	140.00	\$122,426	\$428,980	(\$306,554)
12.00 Turbine	176.67	\$154,493	N/A	N/A

1. AWWA Manual of Water Supply Practices M-1, 7th Edition

2. Represents the current fee inside the city limits (fees outside the city limits are higher)

## PROJECTED WATER CAPACITY FEE REVENUE

Projected fee revenue shown in Figure W9 is based on projected water accounts shown in Figure W3 and the proposed Water capacity fees shown in Figure W8. For residential development, the analysis uses a 0.75-inch meter. For nonresidential development, the analysis uses a 2.00-inch meter. If development occurs at a faster rate than projected, the demand for infrastructure will increase along with capacity fee revenue. If development occurs at a slower rate than projected, the demand for infrastructure will decrease and capacity fee revenue will decrease at a similar rate. Projected capacity fee revenue is \$6,898,557 over the next 10 years, and total expenditures equal \$11,862,934.

**Figure W9: Projected Water Capacity Fee Revenue**

Fee Component	Growth Share	Existing Share	Total
Wells	\$1,639,797	\$0	\$1,639,797
Storage/ Booster Stations	\$2,473,137	\$0	\$2,473,137
Distribution / Transmission	\$3,494,650	\$4,255,350	\$7,750,000
<b>Total</b>	<b>\$7,607,583</b>	<b>\$4,255,350</b>	<b>\$11,862,934</b>

		Residential \$874 per meter	Nonresidential \$4,661 per meter
Year		Meter	Meter
Base	2020	18,743	1,769
Year 1	2021	19,211	1,813
Year 2	2022	19,692	1,858
Year 3	2023	20,184	1,905
Year 4	2024	20,689	1,952
Year 5	2025	21,206	2,001
Year 6	2026	21,736	2,051
Year 7	2027	22,279	2,103
Year 8	2028	22,836	2,155
Year 9	2029	23,407	2,209
Year 10	2030	23,992	2,264
10-Year Increase		5,249	495
Projected Revenue		\$4,589,791	\$2,308,765

Projected Fee Revenue	\$6,898,557
Existing Development Share	\$4,255,350
<b>Total Expenditures</b>	<b>\$11,862,934</b>



## WASTEWATER FACILITIES

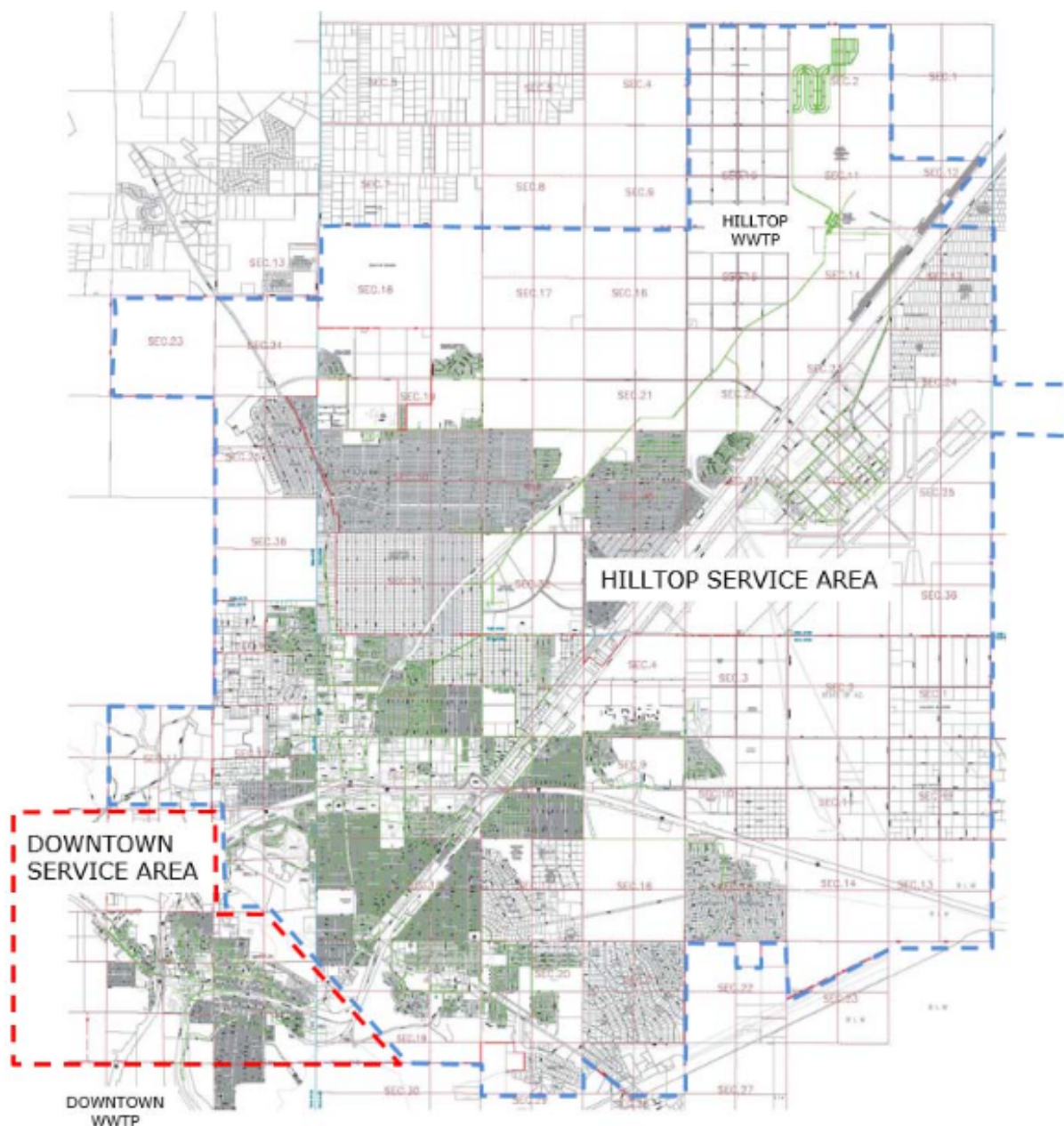
### METHODOLOGY

Wastewater capacity fees include capital components for treatment facilities and interceptor facilities. The buy-in, or cost recovery, methodology is used for treatment facilities, and the plan-based methodology is used for interceptor facilities.

### SERVICE AREA

The Wastewater Service Area includes areas within the Hilltop Service Area and the Downtown Service Area shown in Figure WW1.

**Figure WW1: Wastewater Service Area**





## WASTEWATER FACTORS

Figure WW2 displays the average day gallons per account for 2019. Wastewater capacity fees are calculated using average day gallons per single-family unit and the capital cost per gallon of capacity – this represents an equivalent dwelling unit (EDU). For residential development, average day gallons equal 170 gallons per EDU. Wastewater capacity fees paid by nonresidential development are derived from capacity ratios, according to the size of the new customer's water meter, applied to the equivalent dwelling unit. Capacity ratios were obtained from the American Water Works Association (AWWA) Manual of Water Supply Practices M-1, 7th Edition.

**Figure WW2: Wastewater Factors**

Customer Class	Annual Gallons	Avg. Day Gallons	Accounts	Gallons per Acct
Residential	629,892,057	1,725,732	10,148	170
Nonresidential	610,595,651	1,672,865	1,076	1,555
Total	1,240,487,708	3,398,596	11,224	303

Source: Kingman Sewer Billing data, 2019

## HISTORICAL CUSTOMER DATA

Kingman provided wastewater customer data for FY 2017 through FY 2020. During this time, average annual customer growth was 275 customers within the city limits and 89 customers outside the city limits.

**Figure WW3: Historical Customer Data**

Customer Location	2017	2018	2019	2020	Average
Inside	234	273	243	348	275
Outside	61	75	117	103	89
Total	295	348	360	451	364

Source: Kingman Sewer Billing data, FY 2017 - FY 2020

## PROJECTED GALLONS

To project future wastewater gallons in the Wastewater Service Area, TischlerBise converts the development projections shown in Appendix B (inside city limits) to future wastewater customers and combines that with the average annual growth rate of 89 wastewater customers per year outside Kingman's city limits as shown in Figure WW3. The analysis assumes all new development within the city limits will connect to Kingman's wastewater system. Based on these assumptions, TischlerBise projects 3,529 additional wastewater customers over the next 10 years. The average annual increase of 353 customers is approximately equal to the historical customer data shown in Figure WW3 of 364 customers per year. Applying the wastewater factors shown in Figure WW2 to the projected wastewater accounts shown in Figure WW4 results in a 10-year increase of 750,747 gallons – the amount of capacity needed to serve future development within the study period.

**Figure WW4: Projected Gallons**

				Annual Increase			
Year		Average Day Gallons	Total Accounts	Residential		Nonresidential	
				Gallons	Accounts	Gallons	Accounts
Base	2019	3,398,596	11,224				
	2020	3,482,171	11,627				
1	2021	3,557,246	11,980	58,140	342	16,935	11
2	2022	3,632,321	12,333	58,140	342	16,935	11
3	2023	3,707,395	12,686	58,140	342	16,935	11
4	2024	3,782,470	13,038	58,140	342	16,935	11
5	2025	3,857,545	13,391	58,140	342	16,935	11
6	2026	3,932,619	13,744	58,140	342	16,935	11
7	2027	4,007,694	14,097	58,140	342	16,935	11
8	2028	4,082,769	14,450	58,140	342	16,935	11
9	2029	4,157,844	14,803	58,140	342	16,935	11
10	2030	4,232,918	15,156	58,140	342	16,935	11
10-Year Increase		750,747	3,529	581,400	3,420	169,347	109

## CAPITAL FACILITIES

Shown below in Figure WW5, Kingman's existing wastewater treatment facilities have a design flow capacity of 5,720,000 gallons. Based on existing usage of 3,030,000 gallons, Kingman's available treatment capacity is 2,690,000 gallons.

**Figure WW5: Existing Treatment Facilities**

Description	Design Flow	Usage	Available
Hilltop Wastewater Treatment Plant (HWWTP)	5,100,000	2,770,000	2,330,000
Downtown Wastewater Treatment Plant (DWWTP)	620,000	260,000	360,000
<b>Total</b>	<b>5,720,000</b>	<b>3,030,000</b>	<b>2,690,000</b>

Source: City of Kingman Wastewater Master Plan Update & Inflow/Infiltration Study (2016)

## Treatment Facilities – Buy-In

As shown above, Kingman has excess capacity in its existing wastewater treatment plants to serve future development, and this component of the wastewater capacity fee is based on the availability of excess capacity in Kingman's existing treatment facilities. Shown below, Figure WW6 divides the total plant investment<sup>1</sup> of \$54,166,105 by the total capacity of 5,720,000 gallons. Allocating the total plant investment to the total capacity results in a cost of \$9.47 per gallon (\$54,166,105 total plant investment / 5,720,000 gallons of capacity). Based on a projected increase of 750,747 gallons, the projected 10-year revenue collections equal \$7,109,575.

**Figure WW6: Treatment Facilities Cost per Gallon**

Wastewater Treatment	Cost
Plant Investment, HWWTP	\$35,904,821
Plant Investment, DWWTP	\$18,261,284
Plant Investment, Total	\$54,166,105
÷ Total Capacity (gallons)	5,720,000
<b>Cost per Gallon</b>	<b>\$9.47</b>
10-Year Increase in Gallons	750,747
10-Year Revenue Collections	\$7,109,575

<sup>1</sup> The total plant investment represents the amount Kingman has spent to construct the existing wastewater treatment plants. It does not represent replacement value.

### Interceptor Facilities – Plan-Based

Within 10 years, Kingman plans to construct interceptor facilities to serve future development. Based on discussions with staff, future development over the next 10 years will demand 100 percent of the capacity added by these planned interceptor facilities. Figure WW7 includes cumulative costs of \$11,787,300 to provide capacity of 750,747 gallons. The cost of planned interceptor facilities is \$15.70 per gallon.

**Figure WW7: Interceptor Facilities Cost per Gallon**

Interceptor	Cost
Diagonal Wash Trunk Sewer	\$4,850,000
RSFP (Expansion) - Louise to Diamond Joe	\$785,300
Shangri-la/Eastern Parallel	\$3,550,000
Fairgrounds Parallel	\$168,000
Marlene Parallel	\$856,000
Stockton Hill Parallel	\$1,348,000
Airway Ave (Expansion) - Prospector to new city park	\$230,000
Total	\$11,787,300
÷ 10-Year Increase in Gallons	750,747
Cost per Gallon	\$15.70

## WASTEWATER RATE REVENUE CREDIT

Kingman issued debt to expand the Hilltop Wastewater Treatment Plant (HWWTP) and the Downtown Wastewater Treatment Plant (DWWTP), and it repays that debt through wastewater rate revenue. To avoid a double payment for treatment facilities, the analysis includes a credit for the principal portion of wastewater rate revenue used to repay debt related to treatment facilities. The remaining principal debt service payments for HWWTP equal \$16,425,355. The remaining principal debt service payments for DWWTP equal \$9,679,651. Dividing the annual debt service payments by projected gallons of wastewater provides the annual credit per gallon. To account for the time value of money, annual credits per gallon are discounted using a net present value formula based on a discount rate of 2.00 percent. The net present value of future principal payments is \$6.15 per gallon.

**Figure WW8: Wastewater Rate Revenue Credit**

Year	HWWTP Principal	DWWTP Principal	Total Principal	Gallons	Credit per Gallon
2020	\$1,577,699	\$750,636	\$2,328,334	3,482,171	\$0.67
2021	\$1,634,496	\$774,543	\$2,409,039	3,557,246	\$0.68
2022	\$1,693,338	\$799,213	\$2,492,550	3,632,321	\$0.69
2023	\$1,754,298	\$824,667	\$2,578,965	3,707,395	\$0.70
2024	\$1,817,452	\$850,933	\$2,668,385	3,782,470	\$0.71
2025	\$1,882,881	\$878,035	\$2,760,916	3,857,545	\$0.72
2026	\$1,950,664	\$906,001	\$2,856,665	3,932,619	\$0.73
2027	\$2,020,888	\$934,857	\$2,955,745	4,007,694	\$0.74
2028	\$2,093,640	\$964,632	\$3,058,272	4,082,769	\$0.75
2029	\$0	\$995,356	\$995,356	4,157,844	\$0.24
2030	\$0	\$1,000,779	\$1,000,779	4,232,918	\$0.24
<b>Total</b>	<b>\$16,425,355</b>	<b>\$9,679,651</b>	<b>\$26,105,007</b>		<b>\$6.84</b>
Discount Rate					2.00%
Net Present Value (Credit per Gallon)					<b>\$6.15</b>

## PROPOSED WASTEWATER CAPACITY FEES

Standards used to derive Wastewater capacity fees are shown in the upper section of Figure WW9. The cost per service unit is \$19.02 per gallon, and Kingman will assess Wastewater capacity fees based on meter size and type. The base / single-family meter size is 0.75 inches, and a capacity ratio is used to convert the base meter fee proportionately for larger meters. The capacity ratios are calculated based on data published in *AWWA Manual of Water Supply Practices M-1, 7<sup>th</sup> Edition*.

Wastewater capacity fees are calculated by multiplying the cost per gallon of capacity by the average day gallons per EDU (single-family unit) and the associated capacity ratio. For example, the single-family fee (0.75-inch meter) of \$3,233 is calculated using a cost per service unit of \$19.02 per gallon, multiplied by 170 gallons, multiplied by a capacity ratio of 1.00.

For a 2.00-inch meter, the fee of \$17,234 is calculated using a cost per service unit of \$19.02 per gallon, multiplied by 170 gallons, multiplied by a capacity ratio of 5.33.

**Figure WW9: Proposed Wastewater Capacity Fees**

Fee Component	Cost per Gallon
Treatment Facilities	\$9.47
Interceptor Facilities	\$15.70
Wastewater Revenue Credit	(\$6.15)
Total	\$19.02

Single-Family (Base Meter) Flow Factors	
Average Day Gallons	170

Meter Size and Type	Capacity Ratio <sup>1</sup>	Proposed Fees
0.75 Displacement	1.00	\$3,233
1.00 Displacement	1.67	\$5,400
1.50 Displacement	3.33	\$10,767
2.00 Displacement	5.33	\$17,234
3.00 Singlejet	10.67	\$34,500
3.00 Compound	10.67	\$34,500
3.00 Turbine	11.67	\$37,734
4.00 Singlejet	16.67	\$53,901
4.00 Compound	16.67	\$53,901
4.00 Turbine	21.00	\$67,901
6.00 Singlejet	33.33	\$107,769
6.00 Compound	33.33	\$107,769
6.00 Turbine	43.33	\$140,103
8.00 Compound	53.33	\$172,437
8.00 Turbine	93.33	\$301,773
10.00 Turbine	140.00	\$452,676
12.00 Turbine	176.67	\$571,245

1. AWWA Manual of Water Supply Practices M-1, 7th Edition

## PROJECTED WASTEWATER CAPACITY FEE REVENUE

Projected fee revenue shown in Figure WW10 is based on projected wastewater accounts shown in Figure WW4 and the proposed Wastewater capacity fees shown in Figure WW9. For residential development, the analysis uses a 0.75-inch meter. For nonresidential development, the analysis uses a 2.00-inch meter. If development occurs at a faster rate than projected, the demand for infrastructure will increase along with capacity fee revenue. If development occurs at a slower rate than projected, the demand for infrastructure will decrease and capacity fee revenue will decrease at a similar rate. Projected capacity fee revenue is \$12,935,097 over the next 10 years, and total expenditures equal \$14,279,780.

**Figure WW10: Projected Wastewater Capacity Fee Revenue**

Fee Component		Growth Share	
Treatment Facilities		\$7,109,575	
Interceptor Facilities		\$11,787,300	
Wastewater Revenue Credit		(\$4,617,095)	
Total		\$14,279,780	

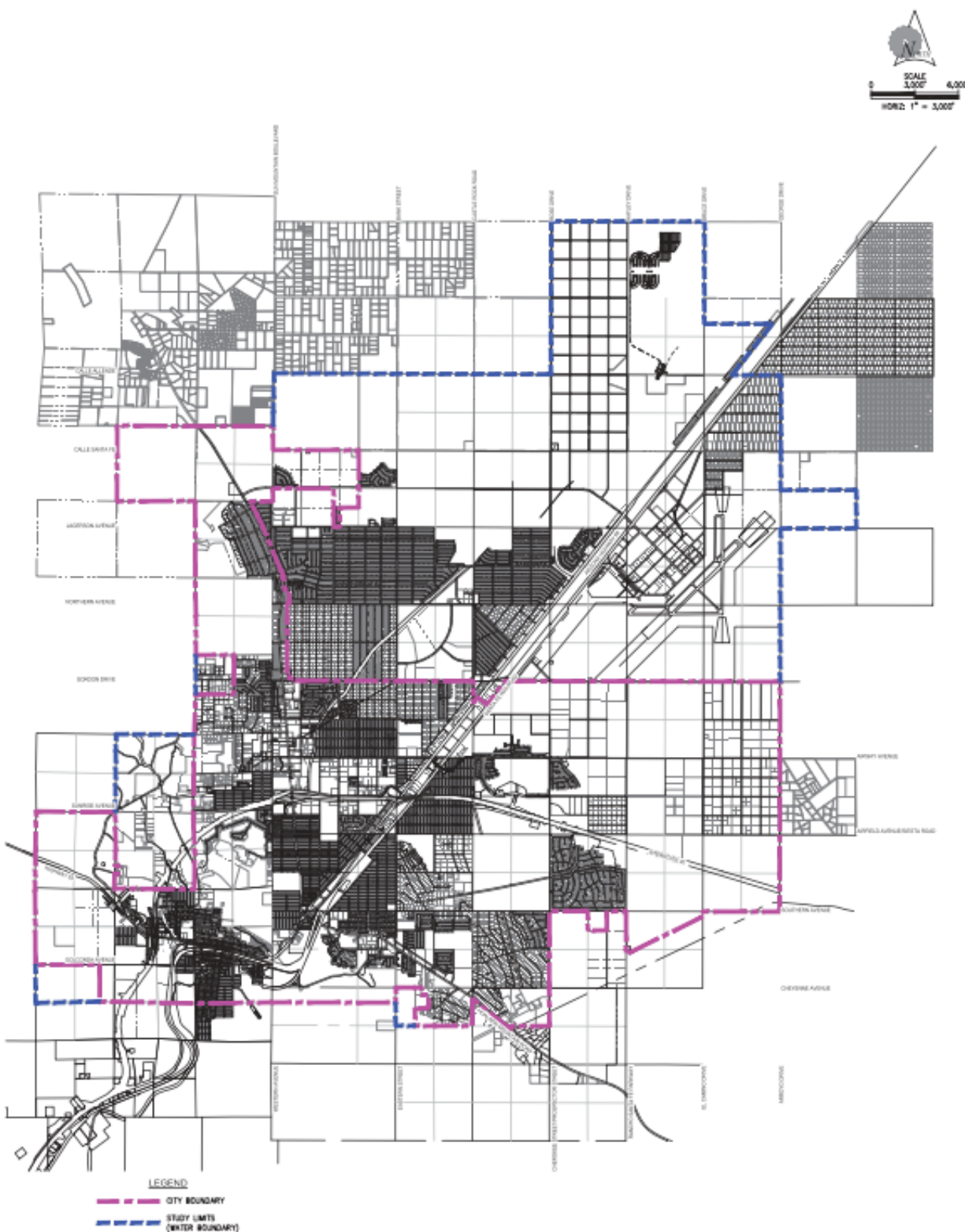
		Residential \$3,233 per meter	Nonresidential \$17,234 per meter
Year		Meter	Meter
Base	2020	10,540	1,087
Year 1	2021	10,882	1,098
Year 2	2022	11,224	1,109
Year 3	2023	11,566	1,120
Year 4	2024	11,908	1,130
Year 5	2025	12,250	1,141
Year 6	2026	12,592	1,152
Year 7	2027	12,934	1,163
Year 8	2028	13,276	1,174
Year 9	2029	13,618	1,185
Year 10	2030	13,960	1,196
10-Year Increase		3,420	109
Projected Revenue		\$11,058,228	\$1,876,869

Projected Fee Revenue	\$12,935,097
Total Expenditures	\$14,279,780

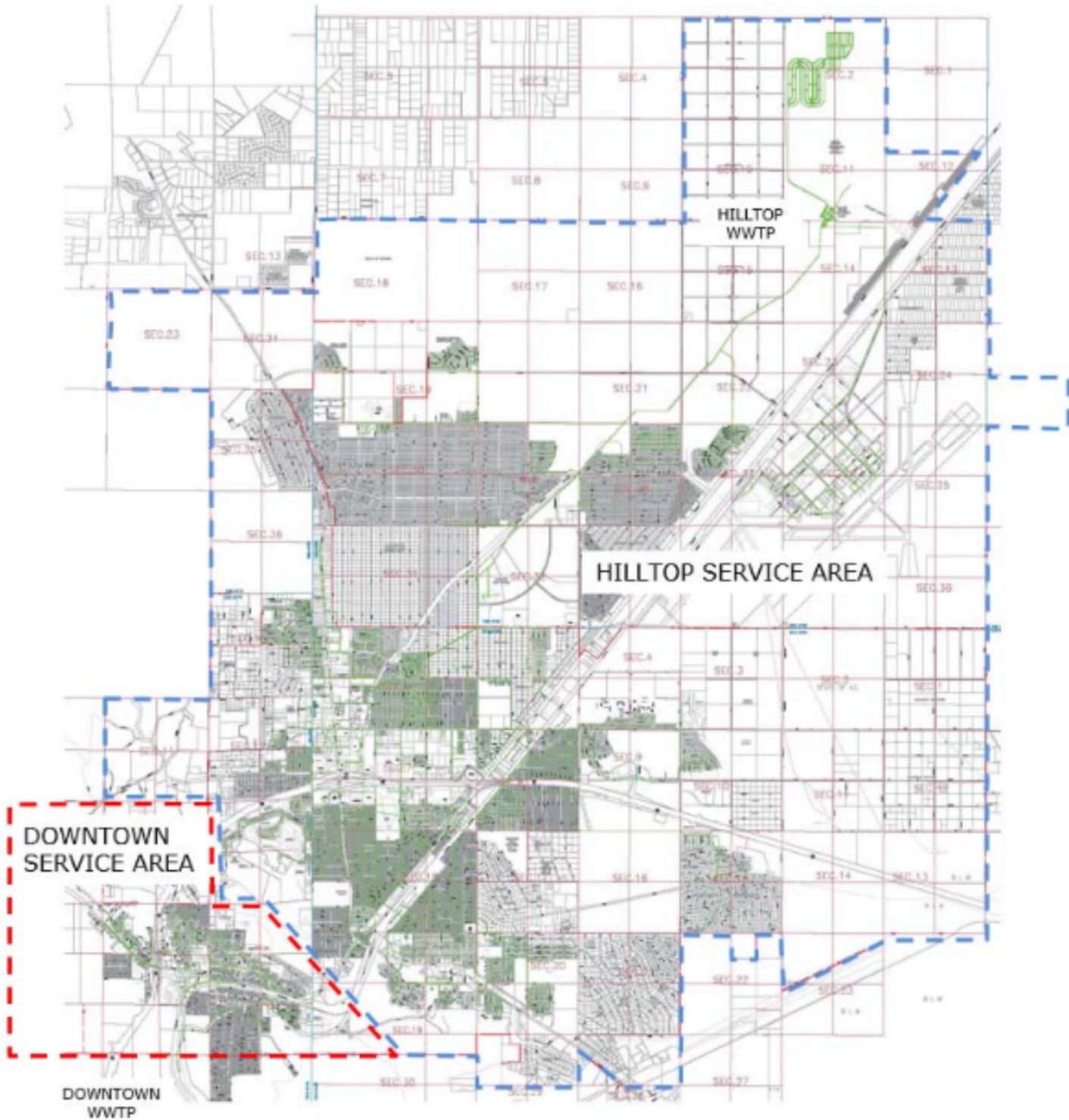
## APPENDIX A: PROPOSED CAPACITY FEE SERVICE AREAS

### WATER SERVICE AREA





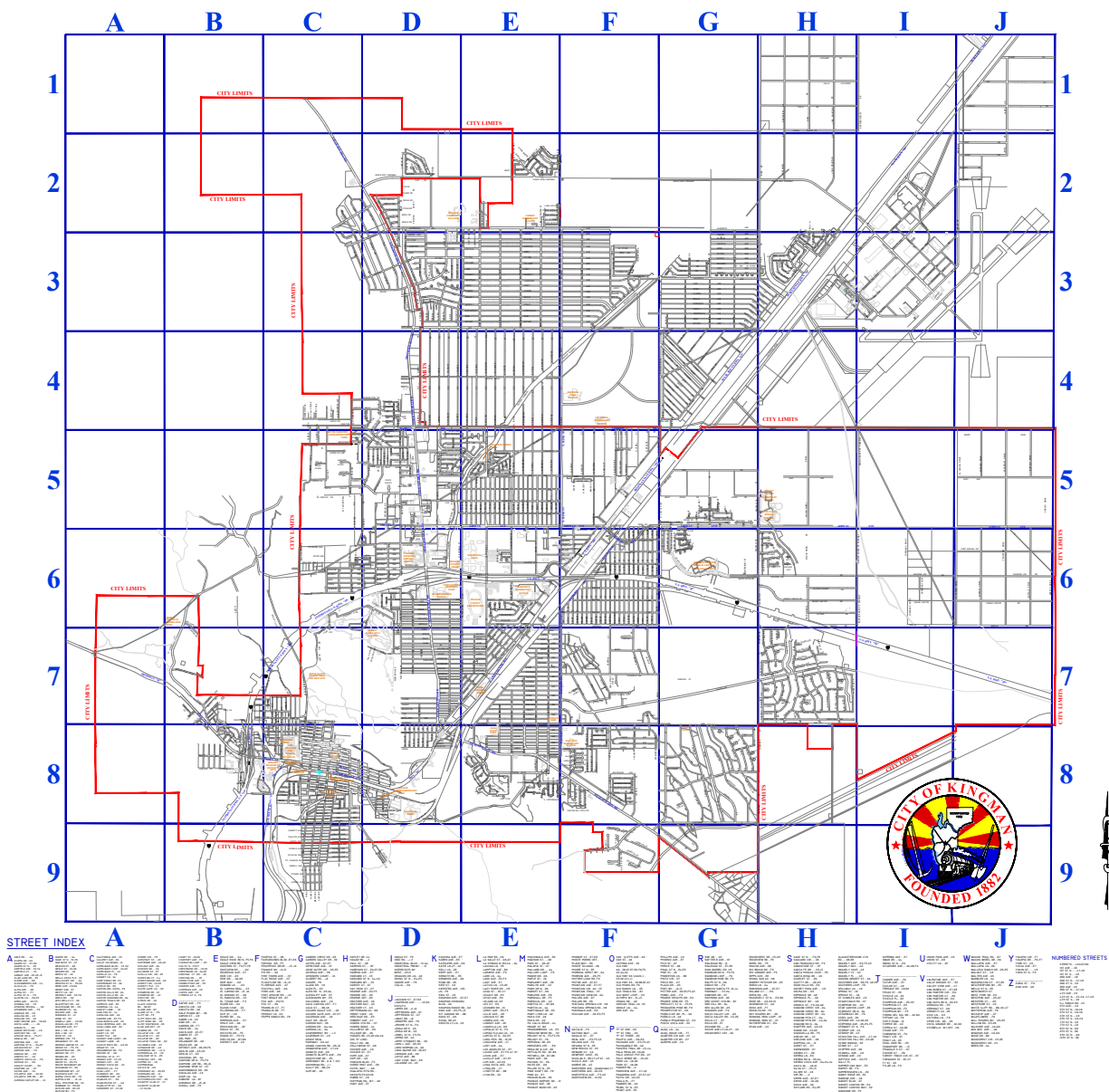
**WASTEWATER SERVICE AREA**



## APPENDIX B: LAND USE ASSUMPTIONS

The estimates and projections of residential and nonresidential development in this Land Use Assumptions document are for areas within the boundaries of the City of Kingman and match the development projections used in Kingman's 2021 Land Use Assumptions, Infrastructure Improvements Plan, and Development Fee Report. The projections included in this section are used to project future wastewater customers within Kingman's city limits. The map below illustrates the areas within the City of Kingman.

### CITY OF KINGMAN STREET LOCATION MAP



## **SUMMARY OF GROWTH INDICATORS**

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Key land use assumptions are population, housing units, and employment projections. Based on discussions with staff, TischlerBise projects housing unit growth using building permit data from the previous five years – this averages 244 single-family units and nine multi-family units annually. TischlerBise projects population by converting annual housing unit increases to population using persons per housing unit factors. For nonresidential development, the analysis uses Esri Business Analyst’s 2019 employment estimate and projects future employment based on recent construction trends.

Development projections are summarized in Figure B9. These projections will be used to estimate development fee revenue and to indicate the anticipated need for growth-related infrastructure. However, development fee methodologies are designed to reduce sensitivity to development projections in the determination of the proportionate share fee amounts. If actual development is slower than projected, fee revenue will decline, but so will the need for growth-related infrastructure. In contrast, if development is faster than anticipated, fee revenue will increase, but Kingman will also need to accelerate infrastructure improvements to keep pace with the actual rate of development. During the next 10 years, residential development projections indicate a resident population increase of 5,996 persons in 2,530 housing units, and nonresidential development projections indicate an employment increase of 1,166 jobs in approximately 456,000 square feet of floor area.

## RESIDENTIAL DEVELOPMENT

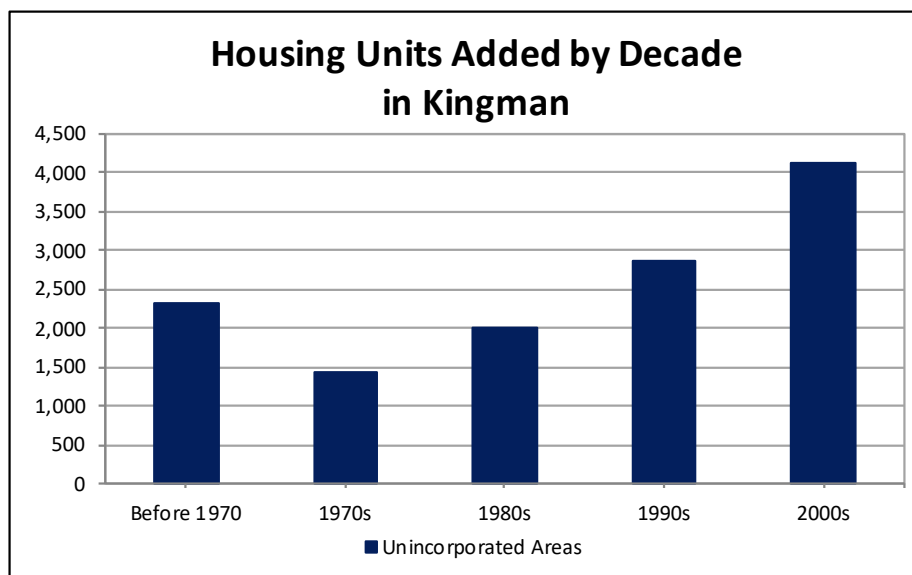
This section details current estimates and future projections of residential development including population and housing units.

### Recent Residential Construction

Development fees require an analysis of current levels of service. For residential development, current levels of service are determined using estimates of population and housing units. Shown below, Figure B1 indicates the estimated number of housing units added by decade according to data obtained from the U.S. Census Bureau. In the previous decade, Kingman's housing inventory increased by an average of 412 units per year.

**Figure B1: Housing Units by Decade**

Census 2000 Housing Units	8,604	Kingman's housing stock grew by an average of 412 housing units per year from 2000 to 2010.
Census 2010 Housing Units	12,724	
New Housing Units 2000 to 2010	4,120	



Source: U.S. Census Bureau, Census 2010 Summary File 1, Census 2000 Summary File 1, 2013-2017 5-Year American Community Survey (for 1990s and earlier, adjusted to yield total units in 2000).

Residential construction from 2015-2019 averaged 253 units per year – 244 single-family units and nine multi-family units.

**Figure B2: Recent Residential Construction**

Year	Single Family	Multi-Family	Total
2015	205	2	207
2016	179	0	179
2017	280	14	294
2018	273	9	282
2019	285	18	303
Average	244	9	253

Source: Kingman Planning & Economic Development Dept

## Housing Unit Size

According to the U.S. Census Bureau, a household is a housing unit occupied by year-round residents. Development fees often use per capita standards and persons per housing unit (PPHU) or persons per household (PPH) to derive proportionate share fee amounts. When PPHU is used in the fee calculations, infrastructure standards are derived using year-round population. When PPH is used in the fee calculations, the development fee methodology assumes a higher percentage of housing units will be occupied, thus requiring seasonal or peak population to be used when deriving infrastructure standards. TischlerBise recommends that development fees for residential development in Kingman be imposed according to the number of persons per housing unit.

Occupancy calculations require data on population and the types of units by structure. The 2010 census did not obtain detailed information using a “long-form” questionnaire. Instead, the U.S. Census Bureau switched to a continuous monthly mailing of surveys, known as the American Community Survey (ACS), which has limitations due to sample-size constraints. For example, data on detached housing units are now combined with attached single units (commonly known as townhouses, which share a common sidewall, but are constructed on an individual parcel of land). For development fees in Kingman, detached units and attached units are included in the “Single-Family” category. The second residential category includes duplexes and all other structures with two or more units on an individual parcel of land. This category is referred to as “Multi-Family.” The third residential category, which includes mobile homes, is referred to as “Mobile Home.” The final residential category, which includes boats, RV, vans, and all other units, is referred to as the “All Other” category.

Figure B3 below shows the occupancy estimates for Kingman based on 2013-2017 American Community Survey 5-Year Estimates. Single-family units averaged 2.40 persons per housing unit, multi-family units averaged 1.55 persons per housing unit, mobile homes averaged 1.47 persons per housing unit, and all other units averaged 1.00 person per housing unit. The average occupancy for all housing units in Kingman was 2.22 persons per housing unit.

**Figure B3: Persons per Housing Unit**

Housing Type	Persons	Households	Persons per Household	Housing Units	Persons per Housing Unit	Housing Mix	Vacancy Rate
Single-Family <sup>1</sup>	23,478	8,888	2.64	9,788	<b>2.40</b>	79.2%	9.19%
Multi-Family <sup>2</sup>	2,704	1,489	1.82	1,746	<b>1.55</b>	14.1%	14.72%
Mobile Home	1,174	647	1.81	797	<b>1.47</b>	6.4%	18.82%
All Other <sup>3</sup>	34	34	1.00	34	<b>1.00</b>	0.3%	0.00%
Total	27,390	11,058	2.48	12,365	<b>2.22</b>	100.0%	10.57%

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates, Tables B25024, B25032, B25033.

1. Includes detached and attached (i.e. townhouses) units.
2. Includes dwellings in structures with two or more units.
3. Includes Boat, RV, van, etc.



## Residential Estimates

According to Arizona's Office of Economic Opportunity, Kingman's 2018 population was 30,600 persons. Deducting the population in group quarters, based on estimates from the American Community Survey, leaves a resident population of 29,135 persons. Dividing the resident population by the citywide occupancy factor of 2.22 persons per housing unit results in an estimate of 13,153 housing units in 2018. Allocating the housing mix shown in Figure B3 to the 2018 housing unit estimate results in 10,412 single-family units, 1,857 multi-family units, 848 mobile homes, and 36 other units. Finally, adding housing units constructed in 2018 and 2019, shown in Figure B2, to the 2018 housing unit estimate results in a 2020 estimate of 13,738 housing units.

To estimate population in the 2020 base year, the analysis applies the occupancy factors shown in Figure B3 to the 2020 housing unit estimates shown below in Figure B4. For example, 10,970 single-family housing units multiplied by 2.40 persons per housing unit results in a 2020 single-family population of 26,328 persons. The analysis assumes the group quarters population remains stable, so the 2020 resident population estimate is 30,531 persons.

**Figure B4: Residential Estimates**

Kingman, Arizona	2018	2019	2020
<b>Population</b>			
Group Quarters <sup>1</sup>	1,465	1,465	1,465
Resident	29,135	29,819	30,531
<b>Total<sup>2</sup></b>	<b>30,600</b>	<b>31,284</b>	<b>31,996</b>
<b>Resident Population</b>			
Single Family	24,974	25,644	26,328
Multi-Family	2,876	2,892	2,920
Mobile Home	1,249	1,247	1,247
All Other	36	36	36
<b>Total</b>	<b>29,135</b>	<b>29,819</b>	<b>30,531</b>
<b>Housing Units</b>			
Single Family	10,412	10,685	10,970
Multi-Family	1,857	1,866	1,884
Mobile Home	848	848	848
All Other	36	36	36
<b>Total</b>	<b>13,153</b>	<b>13,435</b>	<b>13,738</b>

1. U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates

2. Arizona Office of Economic Opportunity, 2018 population estimate

## Residential Projections

Based on discussions with Kingman staff, the analysis uses the five-year residential construction trend shown in Figure B2 to project housing units over the next 10 years – 244 single-family units per year and nine multi-family units per year. Based on these projections, Kingman can expect 2,530 additional housing units over the next 10 years. For this study, the analysis assumes the occupancy factors shown in Figure B3 will remain constant. Converting projected housing units to population, as discussed above, results in a 10-year population increase of 5,996 persons.

Population and housing unit projections are used to illustrate the possible future pace of service demands, revenues, and expenditures. To the extent these factors change, the projected need for infrastructure will also change. If development occurs at a more rapid rate than projected, the demand for infrastructure will increase at a corresponding rate. If development occurs at a slower rate than projected, the demand for infrastructure will also decrease.

**Figure B5: Residential Development Projections**

Kingman, Arizona	2020	2021	2022	2023	2024	2025	2030	10-Year Increase
	Base Year	1	2	3	4	5	10	
<b>Population</b>								
Group Quarters	1,465	1,465	1,465	1,465	1,465	1,465	1,465	0
Resident	30,531	31,130	31,730	32,329	32,929	33,529	36,527	5,996
<b>Total</b>	<b>31,996</b>	<b>32,595</b>	<b>33,195</b>	<b>33,794</b>	<b>34,394</b>	<b>34,994</b>	<b>37,992</b>	<b>5,996</b>
<b>Resident Population</b>								
Single Family	26,328	26,914	27,499	28,085	28,670	29,256	32,184	5,856
Multi-Family	2,920	2,934	2,948	2,962	2,976	2,990	3,060	140
Mobile Home	1,247	1,247	1,247	1,247	1,247	1,247	1,247	0
All Other	36	36	36	36	36	36	36	0
<b>Total</b>	<b>30,531</b>	<b>31,130</b>	<b>31,730</b>	<b>32,329</b>	<b>32,929</b>	<b>33,529</b>	<b>36,527</b>	<b>5,996</b>
<b>Housing Units</b>								
Single Family	10,970	11,214	11,458	11,702	11,946	12,190	13,410	2,440
Multi-Family	1,884	1,893	1,902	1,911	1,920	1,929	1,974	90
Mobile Home	848	848	848	848	848	848	848	0
All Other	36	36	36	36	36	36	36	0
<b>Total</b>	<b>13,738</b>	<b>13,991</b>	<b>14,244</b>	<b>14,497</b>	<b>14,750</b>	<b>15,003</b>	<b>16,268</b>	<b>2,530</b>

## NONRESIDENTIAL DEVELOPMENT

This section details current estimates and future projections of nonresidential development including jobs and nonresidential floor area.

### Nonresidential Square Footage Estimates

TischlerBise uses the term jobs to refer to employment by place of work. In Figure B6, gray shading indicates the nonresidential development prototypes used by TischlerBise to derive employment densities and average weekday vehicle trip ends. For nonresidential development, TischlerBise uses data published in Trip Generation, Institute of Transportation Engineers, 10<sup>th</sup> Edition (2017). The prototype for industrial development is Light Industrial (ITE 110) which generates 4.96 average weekday vehicle trip ends per 1,000 square feet of floor area and has 615 square feet of floor area per employee. Assisted living development uses Assisted Living (ITE 254) as a proxy and generates 2.60 average weekday vehicle trip ends per bed. For hotel development, the proxy is Hotel (ITE 310), and this type of development generates 8.36 average weekday vehicle trip ends per room. Institutional development uses Hospital (ITE 610) and generates 10.72 average weekday vehicle trip ends per 1,000 square feet of floor area and has 354 square feet of floor area per employee. For office & other services development, the proxy is General Office (ITE 710); it generates 9.74 average weekday vehicle trip ends per 1,000 square feet of floor area and has 337 square feet of floor area per employee. The prototype for commercial development is Shopping Center (ITE 820) which generates 37.75 average weekday vehicle trips per 1,000 square feet of floor area and has 427 square feet of floor area per employee.

**Figure B6: Nonresidential Demand Units**

ITE Code	Land Use / Size	Demand Unit	Wkdy Trip Ends Per Dmd Unit <sup>1</sup>	Wkdy Trip Ends Per Employee <sup>1</sup>	Emp Per Dmd Unit	Sq Ft Per Emp
110	Light Industrial	1,000 Sq Ft	4.96	3.05	1.63	615
130	Industrial Park	1,000 Sq Ft	3.37	2.91	1.16	864
140	Manufacturing	1,000 Sq Ft	3.93	2.47	1.59	628
150	Warehousing	1,000 Sq Ft	1.74	5.05	0.34	2,902
254	Assisted Living	bed	2.60	4.24	0.61	na
310	Hotel	room	8.36	14.34	0.58	na
320	Motel	room	3.35	25.17	0.13	na
610	Hospital	1,000 Sq Ft	10.72	3.79	2.83	354
620	Nursing Home	bed	3.06	2.91	1.05	na
710	General Office (average size)	1,000 Sq Ft	9.74	3.28	2.97	337
715	Single Tenant Office	1,000 Sq Ft	11.25	3.77	2.98	335
730	Government Office	1,000 Sq Ft	22.59	7.45	3.03	330
750	Office Park	1,000 Sq Ft	11.07	3.54	3.13	320
820	Shopping Center (average size)	1,000 Sq Ft	37.75	16.11	2.34	427

1. Trip Generation, Institute of Transportation Engineers, 10th Edition (2017).



## Nonresidential Estimates

TischlerBise uses the term jobs to refer to employment by place of work. Shown below in Figure B7, Esri Business Analyst estimates 2019 employment equal to 16,652 jobs. Applying the employment multipliers shown in Figure B6 to employment estimates shown in Figure B7 results in a nonresidential floor area estimate of 6,506,948 square feet. Based on data provided by the Mohave County Tax Assessor, nonresidential floor area increased by an average of 45,572 square feet per year between 2015 and 2019. To estimate nonresidential floor area in 2020, the analysis adds 45,572 square feet to the 2019 estimate – this results in 6,552,520 square feet of nonresidential floor area in 2020. To estimate 2020 employment, the analysis divides the 2020 nonresidential floor area estimates for each nonresidential category by the related square feet per employee factors shown in Figure B6. The 2020 base year employment estimate equals 16,769 jobs.

**Figure B7: Nonresidential Estimates**

Nonresidential Category	2019 Jobs <sup>1</sup>	Percent of Total Jobs	Square Feet per Job <sup>2</sup>	2019 Estimated Floor Area <sup>3</sup>	Jobs per 1,000 Sq. Ft. <sup>2</sup>
Industrial <sup>4</sup>	1,215	7%	615	747,225	1.63
Commercial <sup>5</sup>	4,826	29%	427	2,060,702	2.34
Office & Other Service <sup>6</sup>	3,369	20%	337	1,135,353	2.97
Institutional <sup>7</sup>	7,242	43%	354	2,563,668	2.83
Total	16,652	100%		6,506,948	

1. Esri Business Analyst, 2019.
2. Trip Generation, Institute of Transportation Engineers, 10th Edition (2017).
3. TischlerBise calculation (2019 jobs X square feet per job).
4. Major sectors are Transportation & Warehousing; Manufacturing.
5. Major sectors are Retail; Accommodation & Food Services.
6. Major sectors are Real Estate, Rental & Leasing; Other Services.
7. Major sectors are Health Care; Public Administration.

Nonresidential Category	2020 Jobs <sup>1</sup>	Percent of Total Jobs	Square Feet per Job <sup>2</sup>	2020 Estimated Floor Area <sup>3</sup>	Jobs per 1,000 Sq. Ft. <sup>2</sup>
Industrial <sup>4</sup>	1,224	7%	615	752,458	1.63
Commercial <sup>5</sup>	4,860	29%	427	2,075,134	2.34
Office & Other Service <sup>6</sup>	3,393	20%	337	1,143,304	2.97
Institutional <sup>7</sup>	7,293	43%	354	2,581,623	2.82
Total	16,769	100%		6,552,520	

1. TischlerBise calculation (2020 floor area / square feet per job)
2. Trip Generation, Institute of Transportation Engineers, 10th Edition (2017).
3. TischlerBise calculation (2019 floor area + 45,572 square feet).
4. Major sectors are Transportation & Warehousing; Manufacturing.
5. Major sectors are Retail; Accommodation & Food Services.
6. Major sectors are Real Estate, Rental & Leasing; Other Services.
7. Major sectors are Health Care; Public Administration.

## Nonresidential Projections

To project future nonresidential development in each year of the development projections, the analysis uses the average annual increase of 45,572 square feet, based on Mohave County Tax Assessor data. The annual increase is then allocated, by industry type, based on each industry type's share of nonresidential floor area in 2020. Shown below in Figure B8, this results in a 10-year increase of 456,000 square feet of nonresidential floor area.

To project employment, TischlerBise divides the projected nonresidential floor area by the square feet per employee factors shown in Figure B6. Over the next 10 years, Kingman is projected to gain 1,166 jobs and 456,000 square feet of nonresidential floor area.

**Figure B8: Nonresidential Development Projections**

Kingman, Arizona	2020	2021	2022	2023	2024	2025	2030	10-Year
	Base Year	1	2	3	4	5	10	Increase
<b>Employment</b>								
Industrial	1,224	1,232	1,241	1,249	1,258	1,266	1,309	85
Commercial	4,860	4,894	4,927	4,961	4,995	5,029	5,198	338
Office & Other Services	3,393	3,416	3,440	3,463	3,487	3,511	3,629	236
Institutional	7,293	7,343	7,394	7,445	7,496	7,546	7,800	507
<b>Total</b>	<b>16,769</b>	<b>16,885</b>	<b>17,002</b>	<b>17,118</b>	<b>17,235</b>	<b>17,352</b>	<b>17,935</b>	<b>1,166</b>
<b>Nonres. Floor Area (x1,000)</b>								
Industrial	752	758	763	768	773	779	805	52
Commercial	2,075	2,090	2,104	2,118	2,133	2,147	2,219	144
Office & Other Services	1,143	1,151	1,159	1,167	1,175	1,183	1,223	80
Institutional	2,582	2,600	2,618	2,635	2,653	2,671	2,761	180
<b>Total</b>	<b>6,553</b>	<b>6,598</b>	<b>6,644</b>	<b>6,689</b>	<b>6,735</b>	<b>6,780</b>	<b>7,008</b>	<b>456</b>

## DEVELOPMENT PROJECTIONS

Provided below is a summary of development projections used in the Development Fee Report. Base year estimates for 2020 are used in the development fee calculations. Development projections are used to illustrate a possible future pace of demand for service units and cash flows resulting from revenues and expenditures associated with those demands.

**Figure B9: Development Projections Summary**

Kingman, Arizona	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	10-Year Increase
	Base Year	1	2	3	4	5	6	7	8	9	10	
<b>Resident Population</b>												
Single Family	26,328	26,914	27,499	28,085	28,670	29,256	29,842	30,427	31,013	31,598	32,184	5,856
Multi-Family	2,920	2,934	2,948	2,962	2,976	2,990	3,004	3,018	3,032	3,046	3,060	140
Mobile Home	1,247	1,247	1,247	1,247	1,247	1,247	1,247	1,247	1,247	1,247	1,247	0
All Other	36	36	36	36	36	36	36	36	36	36	36	0
<b>Total</b>	<b>30,531</b>	<b>31,130</b>	<b>31,730</b>	<b>32,329</b>	<b>32,929</b>	<b>33,529</b>	<b>34,128</b>	<b>34,728</b>	<b>35,327</b>	<b>35,927</b>	<b>36,527</b>	<b>5,996</b>
<b>Housing Units</b>												
Single Family	10,970	11,214	11,458	11,702	11,946	12,190	12,434	12,678	12,922	13,166	13,410	2,440
Multi-Family	1,884	1,893	1,902	1,911	1,920	1,929	1,938	1,947	1,956	1,965	1,974	90
Mobile Home	848	848	848	848	848	848	848	848	848	848	848	0
All Other	36	36	36	36	36	36	36	36	36	36	36	0
<b>Total</b>	<b>13,738</b>	<b>13,991</b>	<b>14,244</b>	<b>14,497</b>	<b>14,750</b>	<b>15,003</b>	<b>15,256</b>	<b>15,509</b>	<b>15,762</b>	<b>16,015</b>	<b>16,268</b>	<b>2,530</b>
<b>Employment</b>												
Industrial	1,224	1,232	1,241	1,249	1,258	1,266	1,275	1,283	1,292	1,300	1,309	85
Commercial	4,860	4,894	4,927	4,961	4,995	5,029	5,063	5,096	5,130	5,164	5,198	338
Office & Other Services	3,393	3,416	3,440	3,463	3,487	3,511	3,534	3,558	3,581	3,605	3,629	236
Institutional	7,293	7,343	7,394	7,445	7,496	7,546	7,597	7,648	7,698	7,749	7,800	507
<b>Total</b>	<b>16,769</b>	<b>16,885</b>	<b>17,002</b>	<b>17,118</b>	<b>17,235</b>	<b>17,352</b>	<b>17,468</b>	<b>17,585</b>	<b>17,702</b>	<b>17,818</b>	<b>17,935</b>	<b>1,166</b>
<b>Nonres. Floor Area (x1,000)</b>												
Industrial	752	758	763	768	773	779	784	789	794	800	805	52
Commercial	2,075	2,090	2,104	2,118	2,133	2,147	2,162	2,176	2,191	2,205	2,219	144
Office & Other Services	1,143	1,151	1,159	1,167	1,175	1,183	1,191	1,199	1,207	1,215	1,223	80
Institutional	2,582	2,600	2,618	2,635	2,653	2,671	2,689	2,707	2,725	2,743	2,761	180
<b>Total</b>	<b>6,553</b>	<b>6,598</b>	<b>6,644</b>	<b>6,689</b>	<b>6,735</b>	<b>6,780</b>	<b>6,826</b>	<b>6,872</b>	<b>6,917</b>	<b>6,963</b>	<b>7,008</b>	<b>456</b>